DETAILED ACTION

Response to Arguments

1. Applicant's remarks/arguments with respect to amended claims 1, 10, 31, 51 and 52 have been considered but are moot in view of the new ground(s) of rejection. The rejection follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 10-16, 31-38, 41, 44-46 and 48-56 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Herzberg (US Patent 6,459,678) in view of Abbas et al (US Pub. 2002/0080867) and further in view of Chea, JR., (US Pub. 2002/0021787).

Regarding claims 1, 51, Herzberg discloses a method comprising: determining and storing on a per bin basis a channel frequency response (frequency response of each DMT subchannel) measurement and a noise measurement measured at initialization at a first end of the DSL channel (process address measurement and storage (registers or data registers for storage of electrical or electronic information is well known in the art of computer architecture and register can be any general purpose

register) of noise and response of each subchannel at the start of probe, fig. 5) (col. 2, lines 54-64; col. 5, lines 25-53). Herzberg further discloses that the measurements are communicated to the transmitting modem where the bit loading calculation program resides for calculating the bit allocation for the DMT subchannels (col. 9, lines 23-27). However, Herzberg does not explicitly disclose determining on a per bin basis a signal-to-noise (SNR) measurement measured at show time on a per bin basis at the first end of the DSL channel; and transmitting the SNR at measurement from the first end to a second end of the DSL channel. However, Abbas in a similar field of endeavor discloses determining on a per bin basis a SNR measurement (profile) measured at show time (page 1, section 0004, 0005; page 6, sections 0057, 0058, 0059) and transmitting the measurements to a second end of the DSL channel (the SNR profiles are communicated between each participating modem in a transmit/receive basis) (page 6, section 0057). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use signal to noise measurements at show time as taught by Abbas in the system of Herzberg because signal to noise measurements can allow reconfiguring of a transmitter/receiver pair during showtime to correct for changes in the given service requirements (allow rate adaptation) as well as changes in the associated channel noise profile more effectively. Herzberg and Abbas combined do not explicitly disclose tip and ring of a copper loop. However, Chea in a similar field of endeavor discloses remotely addressable maintenance unit (RAMU) for performing testing and maintenance tasks on the copper loop connected to tip and ring (fig. 5A; page 2, section 0027; page 3, section 0043, 0044; page 4, section 0051, 0052,

0053). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use copper loop with tip and ring as taught by Chea in the combined system of Herzberg and Abbas because it can expand the functional capabilities of the system in providing enhanced testing and maintenance remotely.

Regarding claims 2, 11, 32 Herzberg discloses first end can comprise a central office (CO) end, and the second end comprise a customer premise equipment (CPE) end as a manifestation of DSL technology adaptation (col. 1, lines 36-49).

As per claims 3, 6, 12, 15, 33, 36, 53 and 55, Herzberg discloses the channel is asymmetrical as is inherently implied with the use of ADSL utilizing DMT modulation (col. 2, lines 32-41).

As per claims 4, 13, 34 these claims are analyzed in a similar fashion as claims 2, 11 and 32 as Herzberg discloses transmitter to receiver and receiver to transmitter functions (col. 1, lines 36-49).

Regarding claims 5, 14 and 35, Herzberg discloses the channel is non-overlapping (DMT is non-overlapping is inherently implied).

As per claims 7, 16, 37 the claims are design related and the xDSL technology can be adapted to a very high bit-rate such as HDSL, VDSL, etc., (col. 1, lines 36-49).

As per claim 10, the steps claimed as apparatus is nothing more than restating the function of the specific components of the method as claimed and therefore, it would have been obvious, to a person of skill in the art at the time of the invention, to utilize steps in forming circuit components so as to achieve the desired results of Herzberg

and Abbas combined, considering the aforementioned rejection for the method claim 1 above.

Regarding claims 31, 52 Herzberg and Abbas combined disclose all limitations of the claim above. Herzberg further discloses a computer or other computing device encoding a computer program means for execution by computer (see appendix A) (col. 5, lines 25-52).

As per claims 38 and 41, the channel response at initialization is a program function which can be programmed to represent a normalized complex number (col. 7, lines 16-40).

Regarding claims 48, 50, 54 and 56, Herzberg and Abbas combined disclose all limitations of the claim. The combination further disclose use of ADSL, an asymmetrical subscriber line is one of the xDSL technologies wherein the channel may overlap because of more bandwidth in one direction than the other, typically downstream from the central office (CO) to the subscriber end and inherency is implied with its use.

Regarding claim 49, the channel can be symmetrical is well known in the art disclosed as prior art of the instant application (see page 2, lines 5-14).

4. Claims 44, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herzberg (US Patent 6,459,678) and Abbas et al (US Pub. 2002/0080867) and Chea, JR., (US Pub. 2002/0021787) and further in view of Zuranski et al (USP 6,263,077).

Regarding claim 44, 45, 46, Herzberg, Abbas and Chea combined disclose all limitations of the claim. The combination does not explicitly disclose analyzing time dependent changes (noise) in cross talk levels and line attenuation (fading) at the second end of the channel. Zuranski in a similar field of endeavor discloses analyzer (130) analyze time dependent changes (performs spectral analysis, the analyzer performs FFT and can also perform inverse Fourier transformation, in a first frequency range through an equalizer reducing or attenuating cross talk) in cross talk levels and line attenuation (fading) at the second end of the channel (col. 4, lines 1-2, 30-35, 53-67; col. 5, lines 1-12, 30-40; col. 9, lines 25-30, 31-63; col. 13, lines 18-42). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to analyze time dependent changes (noise or cross talk signal to noise ratio) to maintain line attenuation as taught by Zuranski in the combined system of Herzberg, Abbas and Chea because it can reduce or mitigate the near and far end cross talk noise from data propagated in data rate upstream or downstream of communication signal.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.
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/Chieh M. Fan/
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